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09/981,238	10/17/2001	Dale K. Bell	60,130-1197/01MRA0362	5578
26096 7590 06/05/2007 CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			EXAMINER JOYCE, WILLIAM C	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/981,238  
Filing Date: October 17, 2001  
Appellant(s): BELL, DALE K.

**MAILED**

JUN 05 2007

**GROUP 3600**

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William S. Gottschalk  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed January 16, 2007 appealing from the Office action mailed January 25, 2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

<b>4,754,847</b>	<b>Glaze et al.</b>	<b>7-1988</b>
<b>5,492,419</b>	<b>Miller et al.</b>	<b>2-1996</b>

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-7, 10-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glaze et al. (4,754,847) in view of Miller et al. (5,492,419).

Glaze et al. discloses a drive axle assembly (see fig. 2) comprising an axle housing (68), coaxial axle shafts (104, 106) supported at least partially within said axle housing, a driven shaft (58) having a yoke (38) at one end and supported at least partially within said housing transverse to said axle shafts, a gear assembly (60, 78) disposed within said housing coupling said axle and driven shafts, and a bearing assembly (72, 74) supporting said driven shaft in said housing. Glaze et al. further discloses a differential coupling said axle and driven shafts to permit relative motion between said axle shafts.

Glaze et al. does not disclose the seal arrangement as claimed by the applicant. However, Miller et al. teaches a bearing arrangement (see fig. 1) for a pinion, a through shaft or an input shaft (see col. 1, lines 5-12) comprising a cup affixed to a cage and a cone affixed to a shaft with rolling elements held in place by a retainer arranged between said cup and cone, a first seal (52) interposed between said cone and a pinion

bearing cage adjacent to said yoke (24) and a second seal (50) interposed between said cone and said bearing cage adjacent said pinion, said seals separating said housing into first and second cavities (76, outside of 76) with said bearing assembly and said gear assembly respectively disposed therein, a first lubricant in said first cavity lubricating said bearing assembly and a second lubricant different than said first lubricant in said second cavity lubricating said gear assembly (see col. 3, lines 10-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the seal arrangement of Glaze et al. with the teachings of Miller et al. so as to provide a bearing sealed on both ends for dividing the assembly into two chambers, each having a different lubricant, and prevent the lubricants from entering the adjacent chambers.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glaze et al. in view of Miller et al. as applied to claims 1-7, 10-11 and 14 above, and further in view of Tersigni et al. (5,763,372). The reference combination set forth above discloses an axle assembly but is silent as to the lubricant used in the assembly. However, Tersigni et al. teaches a GL-5 gear lubricant additive used in transmission applications (see col. 14, lines 59-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the lubricant of the reference combination set forth above with the lubricant as taught by Tersigni et al. so as to increase efficiency, reduce friction and reduce corrosion of the axle assembly.

**(10) Response to Argument**

Applicant argues (pages 5-6) the Glaze reference fails to teach the claimed seal arrangement. It is acknowledged the Glaze reference does not teach a differential having a seal arrangement for providing separate lubricant chambers. However, Glaze was not intended to teach the claimed seal arrangement. As described in the Final Rejection (filed January 25, 2005), the Glaze reference teaches the basic structure of a differential. Applicant has misinterpreted the Final Rejection because the Glaze reference was not used to teach the claimed seal arrangement, but was used to teach the basic structure of a conventional differential assembly.

The secondary reference to Miller clearly teaches a seal arrangement used in combination with a vehicle differential for providing separate lubricant chambers. Miller discloses (column 1, third paragraph), standard axle pinion shaft bearings are splash-lubricated from sump oil in an axle assembly and that sump oil contains extreme pressure additives and metallic debris. Miller further identifies that the extreme pressure additives and the metallic debris found in the sump oil reduces the operating life of the bearing. The bearing and seal arrangement of Miller is configured to extend the life of a pinion shaft bearing by separating the sump oil from the bearing oil. Accordingly, it was found to be within the level of one in the art to modify the conventional differential assembly of Glaze with the teachings of a bearing/seal assembly for providing separate lubricant chambers, as taught by Miller, motivation

being to prevent the sump oil from entering the lubricant chamber used for lubricating the bearing.

With respect to the limitation defining the chambers having different lubricants, Miller teaches (column 3, lines 44-50) the sump chamber having a lubricant with chemical additives, such as extreme pressure additives, which is different from the lubricant in the bearing chamber.

With respect to claims 3-5, it is understood the bearing cage is defined as "a pinion bearing cage" (claim 3), "a through shaft bearing cage" (claim 4), and "an input bearing cage" (claim 5). Miller illustrates in Figure 1 a bearing cage (22,24) that is removably connected to a vehicle differential so as to support the bearing/seal assembly. Miller clearly teaches the broad claim language used in describing the cage of the instant device. Specifically, the cage (22,24) of Miller is used to support a pinion and therefore is considered "a pinion bearing cage," is used to support a through shaft and therefore is considered "a through shaft bearing cage," and is used to support an input bearing and therefore is considered "an input bearing cage." It is submitted the claim terminology was broadly interpreted and the claims were properly rejected.

With respect to claim 6, Miller clearly illustrates in Figure 1 the first seal (52) being positioned between the bearing cage (24) and the driven shaft. Fur

With respect to claim 7, Miller clearly illustrates in Figure 1 a cup (32) fixed to the bearing cage (24) and a cone (36) fixed to the driven shaft with rolling elements (40) circumferentially located by a retainer (shown extending from the ends of the rolling

elements) and arranged between the cup and cone, the first seal (52) disposed between and engaging the bearing cage (24) and the cone (36).

With respect to claim 8, the prior art to Tersigni teaches a GL-5 gear lubricant used in transmission applications (see col. 14, lines 59-67). Accordingly, one in the art would recognize the benefits of using a GL-5 gear lubricant in a gear device to increase efficiency, reduce friction and reduce corrosion of the axle assembly.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Tersigni provides motivation for using a GL-5 lubricant in a gear device.

Since the prior art teaches each and every feature of the claimed device, including a motivation for combining the prior art teachings, it is submitted the Final Rejection is proper and should be maintained.

#### **(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.



Art Unit: 3682

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

William C. Joyce

*William C. Joyce* 5/29/07

Conferees:

RR: *[Signature]*

TRH: *[Signature]*